

PRINTERS & SCANNERS

FAQ

Q What's the difference between optical and interpolated scan resolutions?

A It's common to see figures on websites and packaging for both of these. Invariably, the optical resolution is the lower figure. For example, the scanner on Lexmark's X502n MFP (opposite) has a maximum optical resolution of 1,200 dots per inch (dpi), but an interpolated resolution of up to 19,200dpi.

The optical resolution refers to the amount of detail that can be captured by the scanning mechanism. Interpolated resolutions contain more pixels but, like the digital zoom resolution of a camera, the content of these extra pixels is an approximation. The interpolated pixels are created by averaging the contents of the actual scanned pixels adjacent to them, a process similar to a graphics program enlarging images to a higher resolution. High resolutions created through interpolation contain no extra detail than the original smaller image, so it's the optical resolution that's important when buying a scanner.

Kat Orphanides

Printers and audio expert

kat@computershopper.co.uk



EPSON Perfection V500 Photo

★★★★

£170 inc VAT

From www.lambda-tek.com

Epson's Perfection V500 Photo is a flatbed scanner designed to capture high-quality images from film negatives as well as more traditional image sources such as photos and documents. It's less expensive than most dedicated film scanners, and more versatile, though its maximum optical resolution of 6,400dpi can be used only when scanning transparencies. The highest resolution at which it can scan normal documents is 3,200dpi, but this should be fine for most artistic or archival projects.

We were impressed by the sharp, focused images produced by the scanner's optics. However, photo scans produced at default settings were a bit dark. Fortunately, the scanner driver's Professional mode includes a range of image adjustment options, which allow you to tweak colour balance, brightness and contrast, as well as more arcane tools such as tone correction curves and histogram adjustment. Slight colour problems were easy to correct, although our adjustments sometimes reset themselves when we tried to perform a second preview scan. The driver also has simplified Home and Full Auto modes, but the advanced options are so easy to use you probably won't feel the need for these stripped-down alternatives.

It was easy to scan film negatives. The scanner comes with a plastic frame into which you can clip sections of film and then lay on the scanner's glass. This has space for up to 12 35mm or four 120mm medium-format transparencies at once. The white document mat inside the lid must be removed to reveal a second light source, which shines light through the film so it can be captured accurately.



Select which type of film you are scanning from a menu and then preview the scan. The preview displays each frame as a separate thumbnail, allowing you to choose which you want to scan. Each selected frame is then scanned as a separate image. At 2,400dpi, a single frame took just under a minute to scan, although maximum resolution 6,400dpi scans took longer at three minutes and 26 seconds. At maximum resolution, negative scans had a great deal of detail and colour, although we found that sharp lines in transparencies scanned at 6,400dpi looked fuzzy at magnifications above 100 per cent.

The Perfection V500 Photo isn't cheap and it's not worth the extra money if you usually scan only photos and documents. There are a lot of options available to tweak your scans, but while our pictures were sharp

the default colour balance settings didn't always produce the best-looking images, which is frustrating if you want optimal results quickly. However, transparency scans were excellent, making this an ideal choice if you have a lot of old negatives to archive or if you're a keen photographer who hasn't switched to digital. For most people, though, the Epson Perfection V100 Photo (see 'Also consider...' below) is a more affordable alternative.

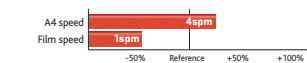
Kat Orphanides

SUMMARY

- ✓ Powerful, easy-to-use interface
- ✓ Excellent transparency scans
- ✗ Expensive

CCD FLATBED SCANNER 6,400x9,600dpi optical resolution, 48-bit colour output, USB Hi-Speed interface
PART CODE B11B189031
DETAILS www.epson.co.uk

PERFORMANCE (see page 66)



Also consider...

SAMSUNG ML-2510

★★★★★

£70 inc VAT

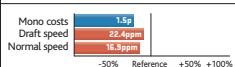
From www.disking.co.uk



BEST BUY This grey laser printer may look a little drab, but it's easy to set up and quick to install. Samsung's ML-2510 has a 250-sheet covered input tray and a single-sheet multipurpose feed slot, but it crumples envelopes.

It peaked at 22.7ppm when printing text, which is impressive for such an affordable printer. It's also cheap to run, with a cost per page of around 1.5p, yet produces high-quality text and mono graphics. It's a great compact budget mono laser printer.

MONO LASER PRINTER
1,200x600dpi resolution, 24ppm maximum speed, parallel and USB Hi-Speed interfaces
PART CODE ML-2510
DETAILS www.samsung.co.uk
✓ Fast; affordable to buy and run; good print quality
FULL REVIEW Oct 2006



EPSON Perfection V100 Photo

★★★★★

£61 inc VAT

From www.lambda-tek.com



BEST BUY The Perfection V100 Photo is a bargain. It can handle negatives and slides, as well as traditional printed materials. The TWAIN driver can break up a strip of negatives or 35mm slides into selectable thumbnails, so it's quick to get all your old media on to a PC.

Quality of scans for all media is excellent, and colours were reproduced faithfully. With a quick scan speed, too, it's almost perfect. If you want good all-round scanning performance, this is the model to buy.

CCD FLATBED SCANNER
3,200x9,600dpi optical resolution, 48-bit colour output, USB Hi-Speed interface
PART CODE B11B184072
DETAILS www.epson.co.uk
✓ Affordable; excellent quality
✗ Fiddly transparency adaptor
FULL REVIEW Sep 2007

LEXMARK X502n

★★★★

£393 inc VAT
From www.ameiva.co.uk

Lexmark's X502n is a reasonably priced single-pass colour laser MFP with all the functions you're likely to need in a small- to medium-sized office. It's fairly compact, with a footprint of just 482x437mm, although it's much heavier than Samsung's CLX-2160N (reviewed in *What's New, Shopper* November 2007). This version combines a colour laser printer with a scanner and fax machine, although the virtually identical X500n doesn't have any fax capabilities and costs £85 less.

The software gave us the option of installing either USB or network drivers, both of which worked immediately. The device itself was simple to set up, although getting the photo developer cartridge to fit correctly was a touch fiddly. The X502n runs fairly quietly, but we were annoyed by odd squeaking sounds and a strong smell of ozone when it printed. Pages emerged curled up, but they readily flattened as they cooled down.

We were pleased with the speed and quality of draft prints, which had clearly defined lettering and were easily good enough for formal correspondence. This is fortunate, as mono text prints at normal quality showed little improvement in character definition, yet took seven minutes to print, longer than equivalent prints from some inkjet MFPs reviewed in this month's

Labs on page 98. A single page at normal quality was equally slow at 19 seconds.

Our mixed-colour document print was faster, with a print speed of 13.5ppm. Images looked glossy and professional, but had a slight red tint, an effect we also noticed on greyscale images printed in colour or auto modes. Our colour photo prints suffered from vertical white stripes. These were most obvious on pale colours and flesh tones, while darker images were barely affected. We also noticed problems with subtle greyscale shading, including a tendency to reproduce pale grey shades as white.

The X502's scanner driver stays open between scans by default, which is great if you're scanning batches of documents. Its interface is a little confusing at first, as it lacks common

features such as the ability to auto-detect document size. Fortunately, you can select your scan area manually or choose from several common sizes via a pull-down menu.

Unlike many MFPs, the X502n's scanner is functional over both network and USB connections. Scan speeds were quick, and the resulting images were clear and had realistic colours. A 6x4in photo scan took just 30 seconds at the maximum resolution of 1,200dpi, while a 150dpi A4 scan took 17 seconds. Copies were also reasonably quick, particularly



the 10-page automatic document feeder (ADF) test, which was copied in mono in just 42 seconds. Unlike colour prints, colour copies didn't suffer from seriously oversaturated red shades.

The X502n isn't without its flaws. Print speeds were poor at normal quality, and colour prints were imperfect. However, draft quality text prints are both quick and presentable, and the scanner works well, even across a network connection. But even with high-yield toner cartridges, its mono print costs aren't that economical at 1.5p per page, and colour is more expensive at around 8p per page. Consumables are a little more expensive than average, too. They include a £107 photo developer cartridge, which has to be changed every 30,000 colour pages, and a fuser maintenance kit, which costs £120 over 60,000 pages. Most people will be better off with Epson's cheaper Aculaser C1100 (see 'Also consider...' below).

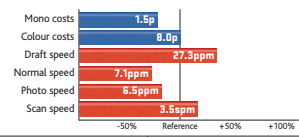
Kat Orphanides

SUMMARY

- ✓ Affordable colour laser MFP
- ✓ Above-average running costs
- ✗ Expensive; flawed colour printing

COLOUR LASER MFP 1,200x600dpi print resolution, 31ppm mono/8ppm colour maximum speed, 1,200x1,200dpi maximum scan resolution, USB Hi-Speed and 10/100 Ethernet interfaces
PART CODE 0025C0240
DETAILS www.lexmark.co.uk

PERFORMANCE (see page 66)



DYMO Cardscan Personal V8

★★★★★

£106 inc VAT
From www.misco.co.uk

PRICE CUT!



Dymo's Cardscan Personal V8 is a tiny USB-powered business card scanner that accurately reads the data from virtually any business card into the address book software that comes with it. The data can then be synchronised with Microsoft Outlook, Lotus Notes or a range of other applications. Scan times were quick and, although the software looks dated, we were pleased with the accuracy of the scanner's results.

BUSINESS CARD SCANNER
300dpi resolution, USB Hi-Speed interface
SOFTWARE REQUIRES
Windows 2000/XP/Vista, Pentium processor, 64MB RAM, 90MB disk space
PART CODE S0756280
DETAILS www.cardscan.co.uk
✓ Quick to scan; accurate result
✗ Software looks dated
FULL REVIEW Jul 2007

EPSON Aculaser C1100

★★★★★

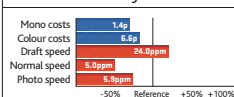
£197 inc VAT
From www.printerland.co.uk

PRICE CUT!



The Aculaser C1100 is a long-standing *Shopper* favourite. Although this four-pass colour laser printer can be hard to set up and configure for optimal print quality, its running costs are very reasonable. It's capable of producing superb prints in colour and black and white, and now costs £85 less than when we last reviewed it.

COLOUR LASER PRINTER
600x600dpi resolution, 25ppm mono/5ppm colour maximum speed, USB Hi-Speed interface
PART CODE C11C567001
DETAILS www.epson.co.uk
✓ Excellent print quality
✗ Fiddly to set up
FULL REVIEW May 2007



LEXMARK Z1320

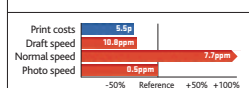
★★★★★

£33 inc VAT
From www.lambda-tek.com/componentsshop



Lexmark's Z1320 is one of the smallest and most affordable single-function inkjets we've seen. Unlike most budget inkjets, it combines reasonable print costs and speeds with good-quality document and photo printing. We were impressed by its clear and readable draft documents. Our only complaint is that its output tray is a little bit flimsy.

FOUR-COLOUR INKJET
4,800x1,200 resolution, USB Hi-Speed interface
PART CODE 20A0402
DETAILS www.lexmark.co.uk
✓ Inexpensive to buy and run; good-quality prints
✗ Flimsy output tray
FULL REVIEW Dec 2007



LEXMARK Z1520

★
£120 inc VAT
From www.argos.co.uk

Lexmark's Z1520 looks like a larger version of the low-cost Z1320, which won the Budget Buy award in our inkjet Labs last month. However, this is a very different printer both in price and performance. It uses the same two-cartridge system, including one tri-colour cartridge, and an optional photo cartridge to take the place of the black. It also has the advantage of an automatic duplexer.

A helpful installation program took us through unpacking and setting up the printer. WiFi is activated by pressing the power button a second time. We were able to connect the printer to our wireless network when the installer prompted us.

The Z1520 proved quick in our draft print test and completed the same 50-page draft test using the duplexer in five minutes and 15 seconds – one of the fastest times we've seen from an inkjet. The lettering on draft prints was dark and legible, although most characters had rough edges. Normal correspondence-quality text documents also printed reasonably fast; the first page took 19 seconds to appear. Characters were solid and well defined, but there were faint black specks between them, even after we cleaned the print heads.

Colour documents looked fantastic, with perfectly sharp text and faithful colour reproduction. Unfortunately, we had to wait just over 20 minutes for the 25-page



document to print. Photo printing was also fairly slow and is definitely not the Z1520's strong suit. All our pictures suffered from a purple tint, which affected skin tones and pale backgrounds, and our photos had a purple sheen when the light hit them.

Although we were using Lexmark's ink and photo paper, the ink took an extremely long time to dry, coming off on our hands and on to the other pictures as we took them out of the printer. Even after half an hour, some ink was still coming off when we touched the photos.

At this high price, the Z1520 is a disappointing

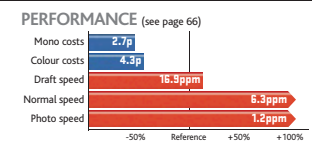
addition to Lexmark's range of wireless printers. Although the cheaper Z1320 lacks WiFi, it is faster at normal document printing, offers lower print costs, and produces better-quality photos. If you're looking for a high-quality home inkjet, Canon's PIXMA iP4300 (below) is half the price and much better quality again. If you absolutely must have wireless printing, Lexmark's X4550 wireless MFP, which scored four stars in last month's *What's New*, is half the price of the Z1520.

Kat Orphanides

SUMMARY

- ✓ Wireless printing
- ✗ Expensive
- ✗ Poor-quality photo printing

COLOUR INKJET PRINTER Four/six colour inkjet, 4,800x1,200dpi resolution, USB Hi-Speed, PictBridge USB and 802.11g wireless interfaces
PART CODE 0011D1001
DETAILS www.lexmark.co.uk



Also consider...

CANON PIXMA iP4300

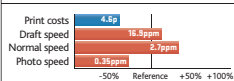
★★★★★
£58 inc VAT
From www.inkraider.co.uk

BEST BUY If you need a budget printer, Canon's PIXMA

iP4300 shows that you don't need to compromise on quality. It has two paper trays and can print on coated CDs or both sides of each sheet of paper. It's fast to produce text, colour graphics and photos. Print quality is high, with no trace of graininess, though photos are a bit oversaturated. Best of all, it has very low running costs.



INKJET PRINTER Five-colour inkjet, 9,600x2,400dpi maximum resolution, USB and PictBridge USB interfaces
PART CODE 1438B008AA
DETAILS www.canon.co.uk
✓ Inexpensive; fast; flexible; stylish; high-quality results
FULL REVIEW Dec 2006



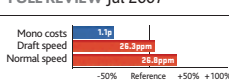
DELL Laser Printer 1720dn

★★★★★ **PRICE CUT!**
£155 inc VAT
From www.dell.co.uk

BEST BUY Dell has knocked over £50 off the price of the Laser Printer 1720dn since it won a Best Buy. While PostScript printing leaves something to be desired when it comes to graphics, its PCL mode produced fast, clear results for both text and image prints. This, in combination with extremely low running costs, makes this mono laser printer an excellent choice.



MONO LASER PRINTER 1,200x1,200dpi resolution, 28ppm maximum speed, parallel, USB Hi-Speed and 10/100 Ethernet interfaces
DETAILS www.dell.co.uk
✓ Fast, high-quality PCL printing; low running costs
✗ Poor PostScript quality
FULL REVIEW Jul 2007



CHOOSING A... Laser Printer

Follow the steps to find your ideal specs

RESOLUTION: 1,200x600dpi
MEMORY: 8MB
SPEED: 24ppm
INTERFACES: USB
PAGES PER MONTH: 5,000
PAPER TRAYS: 150-sheet A4
OPTIONS:

Recommended minimum in grey

- 1** Prices for A4 laser printers with specifications such as those above start at around £45. These models are fine for users who print less than one packet (500 pages) of paper a month. Look for good print quality, flexible drivers and running costs of below 2p per page. Ideally, it should hold paper clean and flat in a horizontal tray and allow manual feeding of headed paper and envelopes with no creasing.
- 2** You'll have to spend more for a printer with the build quality and speed to cope with a heavy workload. Heavy users or small workgroups need up to 25 pages per minute (ppm), and whole departments need more. Bulk printing demands costs of 1p per page or less.
- 3** Colour lasers are available for less than £120. Four-pass models can be cheaper, but much slower to print colour than a single-pass model. Fortunately even some of the most economical printers are now single pass.

4 Support for a printer language such as Printer Control Language (PCL) 6 or PostScript 3 means you can use the printer with any computer and even some PDAs.

5 Not all lasers print graphics well, but a 1,200dpi resolution helps. Colour lasers can often print high-quality graphics, but should have at least 32MB of memory.

6 A network adaptor allows you to connect a printer to an Ethernet network, so all the network users can print to it directly. Smaller groups can use a PC to host and share any printer using Windows' File and Print Sharing Wizard.

7 Duplex printing is an increasingly affordable option and lets you print on both sides of a sheet of paper automatically. A scanner/fax unit turns your printer into a multifunction peripheral. Large groups should get multiple paper trays to deal with headed paper and other stationery.